Programming Exercise 13
History Test

C# Step by Step

This exercise consists of building a history test. To initialize a session, you will ask the users the number of problems they wish to answer. You will echo the number of problems to the user. See figure 1.

When the user begins the test, the application will present the specified number of problems of the specified type. The problems will generate random questions from the test bank. The application will keep score, and if the user misses a question the application will display the correct answer to the problem. At the conclusion of the session the application will report the number of correctly answered questions and give a numeric score. See figure 1.

To help you get started, I have suggested some starter code below. If you use this starter code (you do not have to, you can do this any way you choose), you will need to implement three methods: `Initialize()`, `MakeTest(List<string>, int)`, and `GiveTest(List<string>)`. All of these methods will return values.

The test is initialized by reading a series of questions from a CSV file. The file format has five columns. Column 1 is a question. Column 2 is the correct answer. The remaining three columns are distractors, incorrect answers. Ordinarily the data would be read from a database, but reading from a CSV file simplifies the application.

Please note the following: (1) The number of questions on the test cannot exceed the number of questions in the database. (2) The test questions *must* be randomized. (3) The suggested answers *must also* be randomized.

```csharp
1  using System;
2  using System.Collections.Generic;
3
4  namespace Bridge
5  {
6      class Program
7      {
8          static void Main(string[] args)
9          {
10             //initialize test
11             List<string> testBank = Util.Initialize();
12             Console.WriteLine($"Test bank initialized, {testBank.Count} lines.");
13
14             //Create a test
15             Console.Write($"How many questions would you like to answer? " +
16                 $"Enter from 1 to {testBank.Count}: ");
17             int howMany = int.Parse(Console.ReadLine());
18             List<string> test = Util.MakeTest(testBank, howMany);
19             Console.WriteLine($"Test created, {test.Count} questions.");
20
21             //Give test
22             Console.WriteLine("————————————————————\n" +
23                 "Press any key to start test.\n" +
24                 "————————————————————");
25             Console.ReadKey();
26             int score = Util.GiveTest(test);
27             Console.WriteLine($"You answered {score} out of {howMany} correctly " +
28                 $"and your grade is {(double) score/howMany * 100.0}");
29         }
30     }
31 }
```

Figure 1: History Test


```
Microsoft Visual Studio Debug Console
Initializing test bank ...

Test bank initialized, 15 lines.
How many questions would you like to answer? Enter from 1 to 15: 3
Test created, 3 questions.
----------------------
Press any key to start test.
----------------------
1. "Who was the president that was a famous general?"
        1. "Dwight Eisenhower"
        2. "Ronald Reagan"
        3. "John Kennedy"
        4. "Richard Nixon"
Enter your answer: 1
Correct! Good job.
2. "Who was the president that said 'Tear down this wall!'?"
        1. "Ronald Reagan"
        2. "John Kennedy"
        3. "Harry Truman"
        4. "Richard Nixon"
Enter your answer: 1
Correct! Good job.
3. "Who was the first president of the United States?"
        1. "Thomas Jefferson"
        2. "John Adams"
        3. "Barack Obama"
        4. "George Washington"
Enter your answer: 1
Sorry, the correct answer is "George Washington"
You answered 2 out of 3 correctly and your grade is 66.6666666666667
```